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LVII.—*Descriptions of Nine Species of Ennea and Five Helicoids, all from South Africa.* By JAMES COSMO MELVILL, M.A., D.Sc., F.L.S., and JOHN HENRY PONSONBY, F.Z.S.

[Plate VIII.]

IT is nearly two years since our last paper* upon the non-marine Molluscan fauna of the South-African region was published. Since then one or two new collectors have energetically started in the field, notably Captain Connolly, whilst others, such as Mr. J. Farquhar, are still as successful as ever in prosecuting researches which result invariably in important and valuable discoveries. Amongst these the following fourteen species have been kindly placed in our hands for description. No less than nine species of *Ennea* are here included, mostly of smaller size than usual, and also a few Helicoids. With regard to some of these last we hope before very long to be able to give particulars of their anatomy.

Ennea callista, sp. n. (Pl. VIII. fig. 1.)

E. testa minuta, tenui, omnino pellucida, lævissima, nitida, vitrea, cylindrifirmi; anfractibus ad 6½, apice perobtusos, cæteris fero

* Ann. & Mag. Nat. Hist. ser. 8, vol. i. pp. 129-136 (Feb. 1908).
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rectis, ultimo prolongato, longitudine cæteros exæquante: apertura ovata, peristomato albo, plicis dentibusve quinque prædito, plica parietali prominula, dente labiali squarrose obtuso, basali minuto, columellari parvo, obtuso, plica columellari omnino interna.

Alt. 2.75, diam. 1 mm.

Hab. Dassy Krantz, Grahamstown (*J. Farquhar*).

A remarkably beautiful but very minute form, conspicuous for its extreme smoothness and glassy appearance. The whorls are $6\frac{1}{2}$ in number, the apex being exceedingly obtuse, while the prolonged body-whorl is conspicuous. The peristome is endowed with five teeth or plaits, there being a columellar tooth situate just above the wholly internal plication.

The alliance of this species is with *E. columnella* and *cinolia*, M. & P. From the former it differs in smaller size, ovate as against rounded aperture, larger and squarer labial tooth, while *columnella* is not so large, with bifid labial tooth, and mamillate columellar plait produced superficially.

Ennea connollyi, sp. n. (Pl. VIII. fig. 2.)

E. testa parva, cylindrica, subrimata, fortiter scrobiculata, versus apicem perobtusata; anfractibus 7, ad suturas constrictis, tribus apicalibus planatis, simplicibus, cæteris arcte rectiliratis, liris crassis, fortibus; apertura angusta, peristomate oblongo, subauriformi, albo, quinque plicis dentibusve instructo, plica parietali conspicua, curta, protrusa, labiali magna, incrassata, dente basali parvo, columellari simili, plica columellari omnino interna, mammæformi, aperturam fere claudente.

Alt. 3, diam. 1 mm.

Hab. Majuba, Transvaal (*Connolly*).

A compact and particularly neat species, with which we have much satisfaction in uniting the name of its discoverer. Its nearest ally would seem to be *E. arnoldi*, Sturany, approaching in form nearest to the var. *elongata*, Stur., and differing mainly in the arrangement and proportionate magnitude of the columellar teeth and plaits.

Ennea crispula, sp. n. (Pl. VIII. fig. 3.)

E. testa minuta, cylindrica, rimata, scrobiculata; anfractibus ad 7. quorum apicalis perlævis, obtusissimus, cæteris tumidulis, ad suturas multum impressis, undique pulcherrime et fortiter obliquistriatis; apertura rotunda, peristomate incrassato, albo, nitido, dentibus plicisve quatuor instructo, plica parietali forti, dente

labiali conspicuo bifido, basali acuto, plicæ columellari interna, mammæformi.

Alt. 3·25, diam. 1 mm.

Hab. Grahamstown (per *Hugh Fulton*).

Conspicuous for its tumid whorls, beautifully and strongly striate, and its barrel-like form. Allied to *E. caryatis*, nobis, from which it differs in lesser altitude, more conspicuous ventricosity of whorl, and round peristome, the disposition of plaits and teeth seeming much the same in both species.

Ennea eshowensis, sp. n. (Pl. VIII fig. 4.)

E. testa rimata, perobtusæ, cylindrica, alba, nitida; anfractibus ad 8, apicalibus inclusis rotundo-obtusis, apud suturas paullum impressis, supernis gradatulis, tribus ultimis fere rectis, undique longitudinaliter delicato arcuato-striatis; apertura fere rotunda, peristomate albo, nitido, incrassato, plicis dentibusve quatuor instructæ, plicæ parietali paullum prominente, acuta, acinaciformi, dente labiali bifido, inferiore majore, basali parvo, acuto, plicæ columellari interna, mammæformi.

Alt. 5·5, diam. 2·75 mm.

Hab. Eshowe, Zululand.

Comparable with *E. instabilis*, Stur., and *E. obovata*, Pfr. (= *ampullacea*, Stur.), but differing in form, striation, and other particulars. A very handsome little species, broad proportionally to its stature.

Ennea euschemon, sp. n. (Pl. VIII. fig. 5.)

E. testa cylindræca, albo-cinerea, versus apicem obtusæ; anfractibus ad 8, omnibus obliquistriatis, striis arctis, tenuibus, ultimo rectistriato, sutura lineari; apertura lunari, peristomate incrassato, albo, nitente, dentibus plicisve tribus prædito, plicæ parietali acinaciformi, conspicua, acuta, dente labiali acuto, plicæ columellari nequaquam conspicua vel fere evanida.

Alt. 10, diam. 5 mm.

Hab. Transvaal (*Connolly*).

This beautiful species differs from *E. eximia*, M. & P., in two particulars. Firstly, in the absence of the small upper labial tooth situate close to the parietal plait. When this latter (*eximia*) was figured* the artist unfortunately omitted to represent this important feature, and accordingly we are giving another delineation now for sake of comparison with

* Ann. & Mag. Nat. Hist. ser. 7, vol. i. p. 28, pl. viii. fig. 8 (1898).

the new form (fig. 6). Secondly, *E. euschemon* differs in the extension of the parietal plait some little distance up the body-whorl, beyond the point of insertion of the outer lip.

*Ennea hypsoma**, sp. n. (Pl. VIII. fig. 7.)

E. testa minuta, alba, vitrea, breviter cylindrica; anfractus ad 6, quorum apicales duo obtusi, planati, cæteris tumidulis, apud suturas impressis, longitudinaliter undique arcte tenuistriatis, striis fere rectis; apertura ovato-oblonga, peristomate pro magnitudine percrasso, plicis dentibusve tribus (vel interdum quatuor) prædito, plica parietali magnopere prominula, acuta, dente labiali crasso, obtuso, plica columellari omnino interna, magna, aperturam fere claudente, dente basali fere evanido, in specimine typico perparvo et obscuro.

Alt. 2, diam. .075 mm. (sp. maj.).

Hab. Bathurst (*J. Farquhar*).

This species and *E. periploca* are among the most minute *Enneæ* described, and yet their plications and teeth are more wonderfully disposed than in many of the larger forms of the genus. The particularly prominent parietal plait, projecting well over the plane of the orifice, has suggested the trivial name of this elaborate little shell, whose alliance is, we think, to be traced with the much larger and coarser *E. leppani*, Sturany.

Ennea oppugnans, sp. n. (Pl. VIII. fig. 8.)

E. testa breviter cylindrica, obscure rimata, albo-pellucida, nitida, tenui; anfractibus 6, apicali subplanato, supernis tumescentibus, ad suturas impressis, undique tenuiter obliquistriatis, striis interdum fere evanidis, interdum fortibus; apertura oblonga, peristomate albo, nitido, crassiusculo, reflexo, plicis dentibusve quatuor munito, plica parietali prominula, acinaciformi, acuta, perintrante, dente labiali crasso, bifido, basali interno, parvo, plica columellari omnino interna, aperturam centalem fere claudente.

Alt. 2.75, diam. 1 mm.

Hab. Bathurst, near Grahamstown (*Farquhar*).

A small species, smaller than, but of much the same build as, *E. connollyi* described in this paper; the mouth-processes are very complicate; the columellar plait, wholly internal, spreads centrally, almost closing the orifice. There is a small basal tooth at some little distance below the bifid

* ἕψωμα, an elevation.

labial, while the parietal plait is prominent, acute, and deeply seated. It is comparable with *E. labyrinthea*, M. & P. (Ann. & Mag. Nat. Hist. ser. 6, vol. xvi. p. 479, pl. xviii. figs. 7, 8, 1895), but is larger, and possesses a whorl at least more, while the peristomatal plicæ are even more elaborate in *labyrinthea*.

Ennea parallela, sp. n. (Pl. VIII. fig. 9.)

E. testa vitrea, tenui, recte cylindrica, angusta, obscure et evanide tenuistriata; anfractibus 7, apico perobtusos, supernis tumidis, tribus ultimis fere rectis, ad suturas impressis, ultimo pro rata parte parvo; apertura rotunda, peristomate levi, albo, haud multum incrassato, dentibus plicisve quatuor instructo, plicæ parietali acuta, intrante, dente labiali inconspicuo bifido, basali minuto, plicæ columellari contorta, magna.

Alt. 4, diam. 1 mm. (sp. maj.).

Hab. Grahamstown (*J. Farquhar*).

We have selected as the type of this small *Ennea* a specimen slightly more elongate in form than the few others yet seen by us, because it appears to be quite adult and in especially good condition. The others are proportionately shorter and more delicately striate; these striae seem evanescent, and have indeed almost disappeared in the well-grown type. We do not know any species very nearly akin to this. It resembles *E. crispula*, described in this paper, in form and disposition of peristomatal processes, but is abundantly distinct in texture and other particulars. *E. marie*, M. & P., from Somerset East, may perhaps likewise be compared.

*Ennea periploca**, sp. n. (Pl. VIII. fig. 10.)

E. testa minuta, dolioliformi, delicata, vitrea; anfractibus 6, quorum apicales obtusissimi, læves, vitrei, cæteris longitudinaliter arcte tenuistriatis, striis fere rectis, apud suturas impressis, ventricosis; apertura ovato-oblonga, peristomate crasso, nitido, albo, plicis dentibusve quatuor intricate munito, plicæ parietali prominula, acuta, haud multum intrante, dente labiali magno, prominulo, basali elongatulo, conspicuo, plicæ columellari omnino interna, magna, aperturam semiclaudente.

Alt. 2·15, diam. 1 mm.

Hab. Boschberg Mt., Somerset East (*J. Farquhar*).

As the name would imply, the peristomatal processes of this very refined little species are indeed involved and prominent. It is one of the smallest species known to us and one

* περίπλοκος, intricate.

of the most elaborate in its architecture. The different character of the labial tooth separates it from *columnella*, M. & P., while *montana* possesses another whorl at least and is altogether larger. Indeed, it is hardly comparable with these or their immediate allies. The mouth is differently formed from *hypsona*, described in this paper; indeed, these two stand together as most interesting additions to this wonderfully varied genus.

Helicarion pumilio, sp. n. (Pl. VIII. fig. 11.)

II. testa parva, planulata, succineata, tenui, breviter obscure perforata; anfractibus 3, quorum apicalis submamillatus, nitidus, suturis impressis, ultimo anfractu effuso; apertura late lunari, peristomate tenuissimo, marginem super columellarem obscurissime reflexo.

Alt. 4, diam. 7 mm.

Hab. Zoutpansberg, Transvaal.

At once distinguished from all South-African congeners yet known to us by its small size. The anatomical details of this species, as well as the next, are at present unknown, but the shells of both seem distinct enough to warrant description.

Helicarion russofulgens, sp. n. (Pl. VIII. fig. 12.)

II. testa elliptica, pervitrea, angustissime perforata: anfractibus 4, quorum apicales lente subconici, ad suturas impressis, nitidis, tota superficie laete succineata, ultimo supra medium (in typo) obscure transversim rubro-fasciato; apertura magna, rotundo-lunari, peristomate tenuissimo.

Alt. 6, diam. 11 mm.

Hab. Eshowe, Zululand; also what appears to be the same species from Hilton Road, Maritzburg, Natal.

A very beautiful, shining, glassy, reddish-yellow species, the body-whorl (in the type specimen) obscurely once-banded above the periphery, but some examples are plain. Aperture large, roundly lunate. We cannot compare it closely to any other South-African species; the dark amber colour is noteworthy and the form peculiar. The surface of the body-whorl, at first sight appearing smooth, is in reality somewhat malleate and irregularly obliquely scratched.

Natalina lightfootiana, sp. n. (Pl. VIII. fig. 13.)

N. testa ovata, cinereo-alba, epidermide cornea contacta, tenui, parum nitida, profunde sed anguste umbilicata; anfractibus ad

4½-5, quorum apicales paullulum exserti, apud suturas impressis, ventricosulis, undique longitudinaliter rudistriatis, striis obliquis, irregularibus; apertura rotundo-lunari, peristomate tenui, supra umbilicum fortiter triangulatim reflexo, columella ipsa perobliqua. Alt. 15, diam. 19 mm.

Hab. Zwelldam, Cape Colony (*R. M. Lightfoot*).

Without any very tangible characters, this compactly formed *Natalina* seems perfectly distinct from any other member of the genus. It may to some recall, of course only superficially, certain Australian species of the genus *Badistes*.

We have much pleasure in connecting with this interesting mollusk the name of Mr. Lightfoot, of the South African Museum, Capetown, by whom it was collected.

Zingis thermarum, sp. n. (Pl. VIII. fig. 14.)

Z. testa conico-depressa, sat anguste sed profunde umbilicata, vivide fusca, subtus pallidiora; anfractibus 5, quorum apicalis planatus, laevis, caeteris ad suturas profunde impressis, oblique irregulariter striolatis, ultimo anfractu apud peripheriam obtuse carinato; apertura anguste lunari, peristomate tenui, marginem ad columellarem vix reflexo.

Alt. 3, diam. 16 mm.

Hab. Warmbath, Pretoria, Transvaal (*Connolly*, who possesses a good series of the species).

A dark dun-coloured *Zingis*, to some extent comparable with *Z. arnotti*, Bens., also from South Africa (fig. 16), from which it differs in several particulars, such as colour and texture, being a thicker and browner shell, with aperture also narrower, and more distinct umbilicus. The spire, too, is more conically depressed and the whorls narrower proportionally.

Trachycystis connollyi, sp. n. (Pl. VIII. fig. 15, 15 a.)

T. testa parva, conica, tenui, profunde sed anguste umbilicata, pallide brunnea; anfractibus 4½, quorum apicalis nitidus, perobtusus, laevis, caeteris ventricosus, apud suturas multum impressis, undique longitudinaliter arcte obliquistriatis, striis irregularibus; apertura rotunda, peristomate tenui, paullum supra umbilicum reflexo.

Alt. 3, diam. 4 mm.

Hab. Montagu, 50 miles from Zwelldam. Cape Colony (*Connolly*).

A very curious species, though small, and quite unlike any form hitherto described of which we are cognizant. It may prove not to belong to *Trachycystis*.

EXPLANATION OF PLATE VIII.

- Fig. 1. *Ennea callista*.
 Fig. 2. — *connollyi*.
 Fig. 3. — *crispula*.
 Fig. 4. — *eshovensisi*.
 Fig. 5. — *euschemon*.
 Fig. 6. — *eximia*, M. & P.
 Fig. 7. — *hypsoma*.
 Fig. 8. — *oppugnans*.
 Fig. 9. — *parallela*.
 Fig. 10. — *periploca*.
 Fig. 11. *Helicarion pumilio*.
 Fig. 12. — *russofulgens*.
 Fig. 13. *Natalina lightfootiana*.
 Fig. 14. *Zingis thermanum*.
 Figs. 15, 15 a. *Trachycystis connollyi*.
 Fig. 16. *Zingis arnotti*, Benson.

LVIII.—*Descriptions of Four new Frogs and a new Snake discovered by Mr. H. Sauter in Formosa.* By G. A. BOULENGER, F.R.S.

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Rana adenopleura.

Vomerine teeth in two small oblique groups between the choanæ. Head moderate, as long as broad; snout obtusely pointed, prominent, as long as the orbit; canthus rostralis obtuse; loreal region oblique, concave; nostril equally distant from the eye and from the end of the snout; inter-orbital region nearly as broad as the upper eyelid; tympanum very distinct, two-thirds to three-fourths the diameter of the eye. Fingers slender, with slightly swollen tips, first extending slightly beyond second; toes slender, half-webbed, the tips dilated into small but distinct disks; subarticular tubercles moderate; a small oval inner metatarsal tubercle and sometimes a rounded outer one at the base of the fourth toe. The tibio-tarsal articulation reaches the tip of the snout or between the eye and the tip of the snout. Skin smooth; a moderately broad, very prominent, dorso-lateral glandular fold. Greyish brown above, with or without darker spots and marblings, with or without a light vertebral line; a more or less distinct dark band on each side of the head, passing through the eye; a whitish streak along the upper lip; dorso-lateral fold dark-edged; limbs with dark cross-bars; hinder side of thighs yellowish, spotted or marbled with